

EM/DT (Q11L12)

40% (8/20)

- ✗ 1. With the increase of k , the decision boundary will be
- ☐ A simplified
 - ☒ B more complex
 - ☐ C I do not know
 - ☐ D unchanged
- ✗ 2. Which of these algorithms can be used to fill the missing values
- ☐ A KNN for regression
 - ☒ B KNN for classification
 - ☐ C both
 - ☐ D I do not know
- ✗ 3. Decision Tree Decision Boundaries
- ☒ A are a step-wise constant function
 - ☐ B I do not know
 - ☐ C continuous function
 - ☐ D are axis-parallel rectangles
- ✗ 4. Root Node has
- ☐ A no incoming edges and zero or more outgoing edges
 - ☒ B one incoming edge and two or more outgoing edges
 - ☐ C one incoming edge and no outgoing edges
 - ☐ D I do not know
- ✓ 5. Pruning the tree means
- ☒ A Simplify the tree
 - ☐ B Split the tree's nodes
 - ☐ C Merge the tree's nodes
 - ☐ D I do not know

✗ 6. Gini index equals to

- ☐ A $1 - \sum (p_i^2)$
- ☐ B $1 + \sum (p_i^2)$
- ☐ C $\sum (p_i * \log(p_i))$
- ☐ D $-\sum (p_i * \log(p_i))$
- ☒ E I do not know

✗ 7. Entropy starts with 0

- ☒ A True
- ☐ B False
- ☐ C I do not know

✗ 8. Overall impurity measure can be obtained by

- ☐ A a weighted average of individual rectangles
- ☐ B majority voting
- ☒ C I do not know

✗ 9. At each stage, we choose the split with

- ☐ A the lowest Gini index
- ☐ B the lowest Chi-square value
- ☒ C the highest entropy
- ☐ D I do not know

✓ 10. We can perform the Decision Trees in r using

- ☒ A `rpart()`
- ☐ B `decisiontree()`
- ☐ C `destree()`
- ☐ D `reg.tree()`
- ☐ E I do not know

✓ 11. `minsplit` in R means

- ☒ A the minimum number of observations that must exist in a node in order for a split to be attempted
- ☐ B the minimum number of observations in any terminal node
- ☐ C the minimum number of splits
- ☐ D I do not know

- ✓ 12. Bagging is a technique used to reduce
- ☒ A the variance of our predictions
 - ☐ B the bias of our predictions
 - ☐ C both
 - ☐ D I do not know
- ✓ 13. Bootstrap aggregation allows sampling
- ☒ A with replacement
 - ☐ B without replacement
 - ☐ C I do not know
 - ☐ D both
- ✗ 14. How can Ensemble methods be constructed?
- ☐ A By manipulating the training set
 - ☐ B By manipulating the input features
 - ☐ C By manipulating the class labels
 - ☐ D By manipulating the learning algorithm
 - ☐ E All of them
 - ☐ F None
 - ☒ G I do not know
- ✓ 15. Repeatedly sampling observations are taken
- ☐ A from general population
 - ☒ B original sample data set
 - ☐ C I do not know
 - ☐ D None
- ✗ 16. Random Forest differs from bagging
- ☐ A by a random sample of m predictors
 - ☒ B by bootstrapped training samples
 - ☐ C by adaptive sampling
 - ☐ D I do not know

✗ 17. Boosting differs from bagging

- ☐ A by a random sample of m predictors
- ☐ B by bootstrapped training samples
- ☐ C by adaptive sampling
- ☒ D I do not know

✗ 18. Averaging many highly correlated quantities

- ☐ A lead to as large of a reduction in variance
- ☐ B does not lead to as large of a reduction in variance
- ☐ C lead to as large of a reduction in bias
- ☒ D I do not know

✓ 19. We can perform a Random forest in R using the function

- ☒ A randomForest()
- ☐ B rf()
- ☐ C randomF()
- ☐ D boot()
- ☐ E I do not know

✓ 20. Random Forest works

- ☐ A for classification
- ☐ B for regression
- ☒ C both
- ☐ D I do not know